Clean version of all pending claims

1. (Amended once) A process comprising:

forming a metal interconnect structure onto a substrate, said metal interconnect structure extending above a surface of the subsrate;

forming, subsequent to said forming a metal interconnect structure, a carbon-doped oxide (CDO) layer with a first concentration of carbon dopants therein on said substrate and between elements of said metal interconnect structure; and

continuing to form, subsequent to said forming a CDO layer with a first concentration of carbon dopants, said CDO layer further above said metal interconnect structure with a second concentration of carbon dopants therein, wherein the first concentration is different than the second concentration.

2. (Amended once) The process according to Claim 1 further comprising:

forming, subsequent to said continuing to form, the CDO layer further with a third concentration of carbon dopants therein, wherein there is a linear correlation of the concentration of carbon dopants between the first concentration, the second concentration, and the third concentration.

3. (Amended once) The process according to Claim 1 further comprising:

forming the CDO layer further with a third concentration of carbon dopants therein, wherein the first and third concentrations are higher than the second concentration.

A1

4. (Amended once) The process according to Claim 1 further comprising:

forming the CDO layer further with a third concentration of carbon dopants therein, wherein the first and third concentrations are lower than the second concentration.

5. The process according to Claim 1 wherein said first concentration is higher than said second concentration.

6. The process according to Claim 1 wherein said first concentration is lower than said second concentration.

7. (Amended once) A process comprising:

amended

forming a carbon-doped oxide (CDO) layer with a concentration of carbon dopants therein;

A2

wherein the concentration varies substantially linearly from a top of the CDO layer to a bottom of the CDO layer.

8. (Amended once) The process according to Claim 7 wherein the concentration is higher at the top of the CDO layer and lower at the bottom of the CDO layer.

A2

9. (Amended once) The process according to Claim 7 wherein the concentration is lower at the top of the CDO layer and higher at the bottom of the CDO layer.

10. The process according to Claim 7 wherein the concentration varies between about 1 percent and about 20 percent by atomic mass.

11-23. (Cancelled)

24.
27. (New) An apparatus, comprising:

a carbon-doped oxide (CDO) layer having an interconnection structure disposed within the CDO layer and having a concentration of dopant that varies substantially linearly from a top of the CDO layer to a bottom of the CDO layer.

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A3

25.
28. (New) The apparatus of claim 24 27, wherein the concentration is higher at the top of the CDO layer than at the bottom of the CDO layer.

26.
29. (New) The apparatus of claim 24 27, wherein the concentration is lower at the top of the CDO layer than at the bottom of the CDO layer.

27.
30. (New) An interlayer dielectric comprising:

a carbon-doped oxide (CDO) layer having a first region with a first concentration of carbon dopants therein, a second region disposed on the first region and having a

second concentration of carbon dopants therein, and a third region disposed on the second region and having a third concentration of dopants therein,

wherein the first and third concentrations are higher than the second concentration.

28.
~~31.~~ (New) An interlayer dielectric comprising:

a carbon-doped oxide (CDO) layer having a first region with a first concentration of carbon dopants therein, a second region disposed on the first region and having a second concentration of carbon dopants therein, and a third region disposed on the second region and having a third concentration of dopants therein,

wherein the first and third concentrations are lower than the second concentration.

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29.
~~32.~~ (New) An interlayer dielectric comprising:

a carbon-doped oxide (CDO) layer having a first region with a first concentration of carbon dopants therein, a second region disposed on the first region and having a second concentration of carbon dopants therein, a third region disposed on the second region and having a third concentration of carbon dopants therein, and a fourth region disposed on the third region and having a fourth concentration of carbon dopants therein;

wherein the first and third concentrations are each higher than either of the second and fourth concentrations.

80.
33. (New) An interlayer dielectric comprising:

a carbon-doped oxide (CDO) layer having a first region with a first concentration of carbon dopants therein, a second region disposed on the first region and having a second concentration of carbon dopants therein, a third region disposed on the second region and having a third concentration of carbon dopants therein, and a fourth region disposed on the third region and having a fourth concentration of carbon dopants therein; wherein the first and third concentrations are each lower than either of the second and fourth concentrations.

REMARKS

Claims 22-26 were originally inadvertently misnumbered and have been renumbered 19-23 by the Examiner. These claims, as well as claims 11-18, have been cancelled. Seven new claims have been added, numbered 27-33 to avoid any confusion with the previously numbered claims 22-26.

Claims 1, 5-7, 11-13 and 17-19 have been rejected under 35 USC 102(a) as being anticipated by U.S. patent no. 6,251,770 ("Uglow").

Claims 2-4, 8-10, 14-16 and 20-23 have been rejected under 35 USC 102(a) as being anticipated by Uglow, or in the alternative have been rejected under 35 USC 103(a) as being obvious over Uglow.